ABSTRACT OF THE DISCLOSURE

The invention provides mechanisms for the co-localization in a living cell of a target molecule and of an inhibitor for the target molecule. The invention also provides novel chimeric $tRNA^{Lys}$-ribozyme molecules that compete effectively with $tRNA^{Lys}$ for HIV-1 reverse transcriptase binding sites. The chimeric human $tRNA^{Lys}$-ribozymes inhibit HIV reverse transcription by delivering inhibitors such as ribozymes of HIV-1 reverse transcriptase directly to the virion particle and render it non-functional. The chimeric molecules of the invention thus serve as highly specific non-toxic therapeutic agents and vaccines for viral, including lentiviral, infections. These chimeric molecules also reveal a novel, site specific RNA cleaving activity of HIV-1.

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